

NEBRASKA'S WATER MANAGEMENT RESOURCE

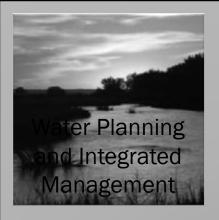
Providing the sound science and support for managing Nebraska's most precious resource.

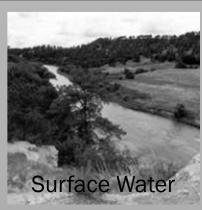
MODEL FOR SUSTAINABLE WATER USE

JIM SCHNEIDER, JESSE BRADLEY, SHUHAI ZHENG, JENNIFER SCHELLPEPER, and JEN RAE WANG Nebraska Department of Natural Resources



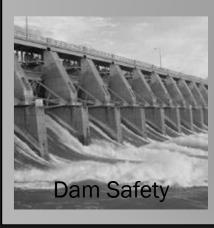
Providing the sound science and support for managing Nebraska's most precious resource.









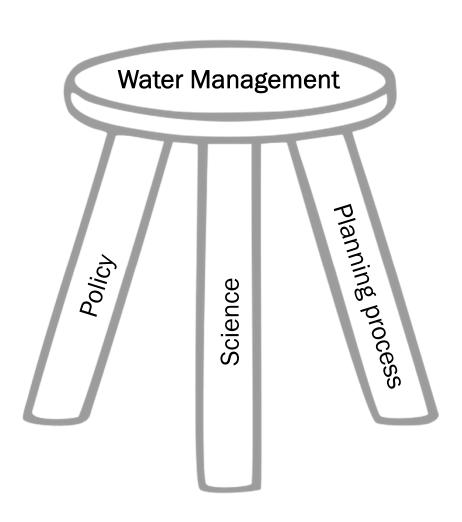




WATER MANAGEMENT, PLANNING, AND POLICY



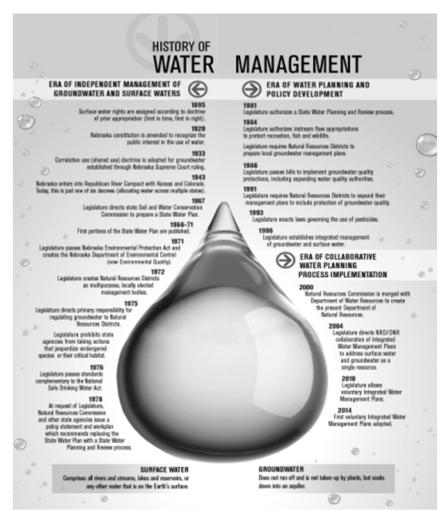
Three Pillars of Water Management





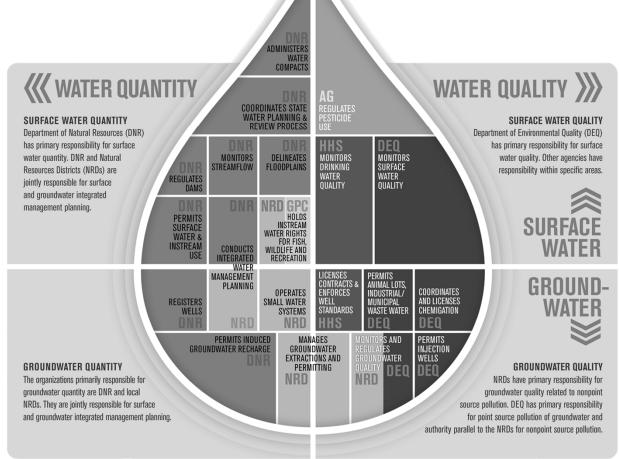
Nebraska's Water Policy History

- ➤ State water plan
- Planning and review process
- ➤ Policy issue studies
- ➤ Legislation



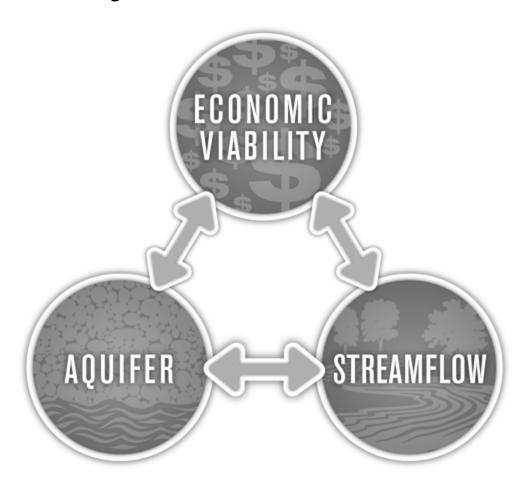


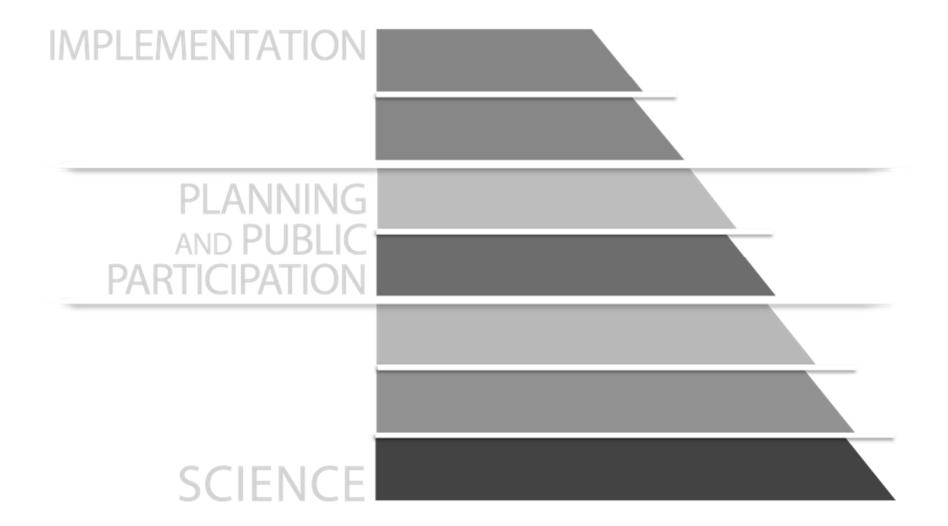
Nebraska's Water Policy Current Framework





Sustainability for Nebraska







FLOODPLAIN, DAM SAFETY, AND DATA COLLECTION PROGRAMS

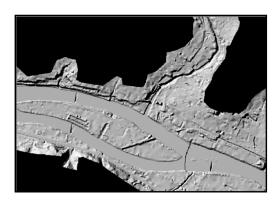


- ➤ Well-developed policy
- ➤ Scientific approach well-defined
- ➤ Planning process structured by federal, state, and local responsibilities

Floodplain Program

Base + Topography + Flood Data = DFIRM







Base

Topography

Flood Data

SAG award

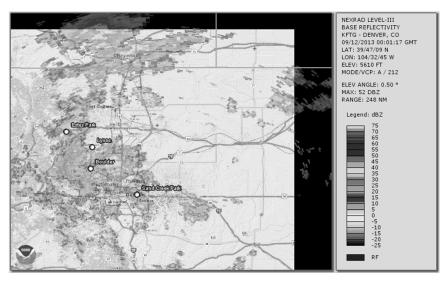
- 400+ communities
- ~20,000 policies
- \$2 billion coverage by flood insurance

DFIRM

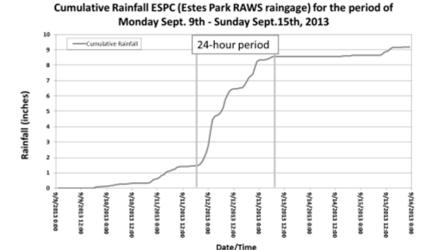




2013 Flood Flow Project



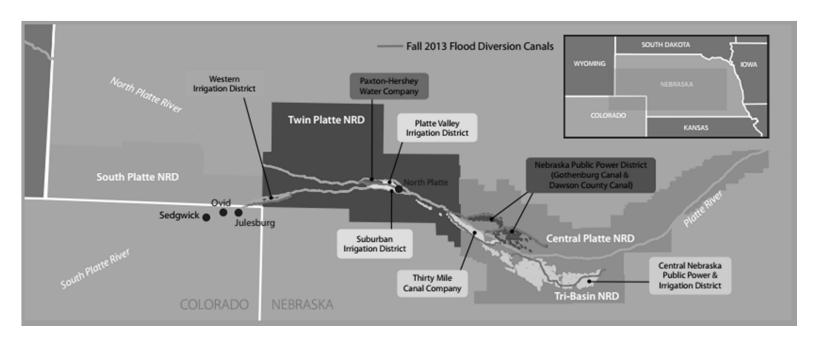
Peak period of rainfall (6 PM Tuesday – 6 PM Wednesday)



2013 Flood Flow Project

Role of Floodplain Program

- ➤ Coordinated Nebraska Response
- ➤ Worked with Integrated Water Management Division to divert flood flows





2013 Flood Flow Project

Testimonials

"Shuhai — You probably already got this. You were right on target so far and have done a great job!"

Michael Moritz, NOAA

"I wish to thank all the folks at NE DNR who assisted the NWS during this historic event. I think the information exchange between our offices worked well."

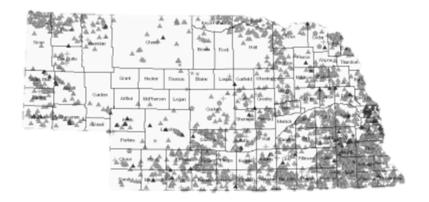
Kevin Low, NOAA

Kent Miller of Twin Platte NRD wanted us to know that he spoke to the city administrator in North Platte and he was very grateful and complimentary for the flood inundations maps that we provided.



Dam Safety Program

- Reviews and approves plans for new dams
- Maintains Nebraska Dam Inventory
- ➤ Periodically inspects all dams in the state
- ➤ Assures emergency action plans are in place for all high hazard potential dams
- ➤ Provides education about dams to dam owners and the pubic







Data Collection Program

- ➤ Oversees the operation of:
 - o 110 stream gages
 - o 120 canal gages
- >Assists with monitoring over 4,000 surface water pumps
- ➤ Oversees the NeRAIN program
 - o ~800 active volunteers
- ➤ Conducts detailed topographic surveys
- Assists DNR field offices with field inspections, water administration, and dam inspection
- ➤ Provides information for state-wide water planning and policy development



INTEGRATED WATER MANAGEMENT

Science and Planning



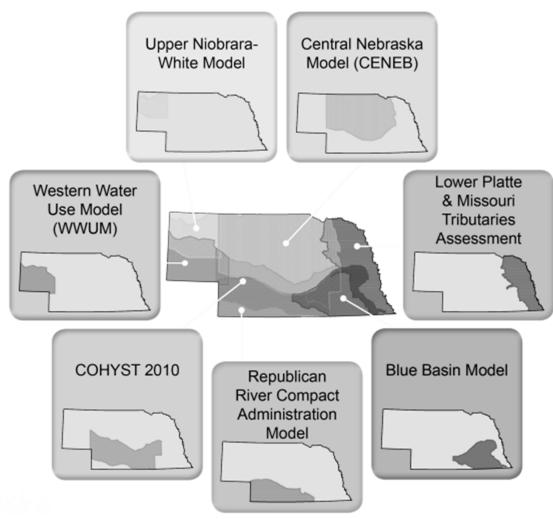
Water Management **Projects** Strategic Planning Actions Goals and Objectives for Water Planning Stakeholder Involvement Water Availability and Water Shortages Water Supplies and Water Uses Hydrologic Models, Data, and Analyses



Water Management Projects Strategic Planning Actions Goals and Objectives for Water Planning Stakeholder Involvement Water Availability and Water Shortages Water Supplies and Water Uses Hydrologic Models, Data, and Analyses



Projects Across the State





County crop distribution data (NASS) industrial and nicipal

Net Irrigation Requirement (CROPSIM model)

Hydropower appropriations

Induced groundwater recharge permits

Central Nebraska Model

Upper Niobrara White Model

Municipal groundwater consumptive use

Pan evaporation data

Industrial groundwater consumptive use Reservoir surface area

DNR regression

Western Water Use Model

Instream flow appropriations

Subbasin proportion of basin water supply

DNR stream gages

NPPD stream gages

USGS stream gages

DNR surface water permits database **Blue Basin Model**

Groundwater acres (NRD certified acres and DNR land use datasets)

Pumping and return records from Lincoln and Omaha **Analytical Jenkins Method**

Cooperative Hydrologic Study 2010 Reservoir storage (Bureau of Reclamation)

Reservoir storage (DNR)

Surface water demands from downstream subbasin



Mu**Shotjachshillingsbirden**idatause



An Integrated Network of Scientific Information & GeoHydrologic Tools

IMPLEMENTATION

Water Management Projects

Strategic Planning Actions

PLANNING AND PUBLIC PARTICIPATION Goals and Objectives for Water Planning

Stakeholder Involvement

Water Availability and Water Shortages

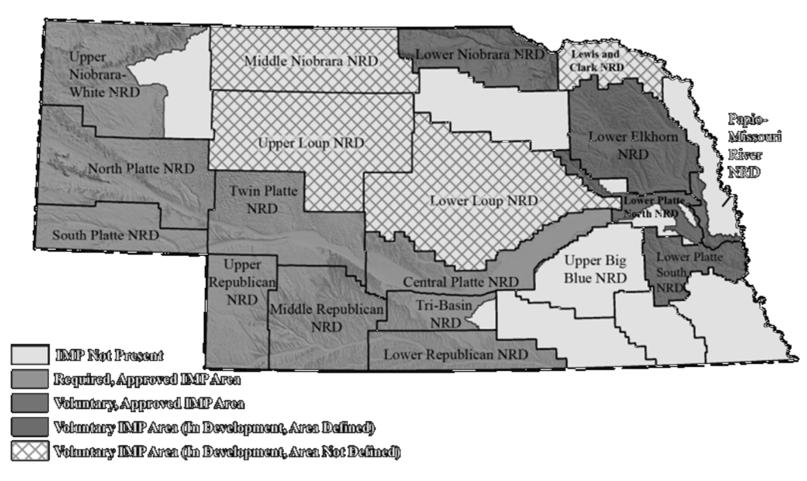
Water Supplies and Water Uses

SCIENCE

Hydrologic Models, Data, and Analyses



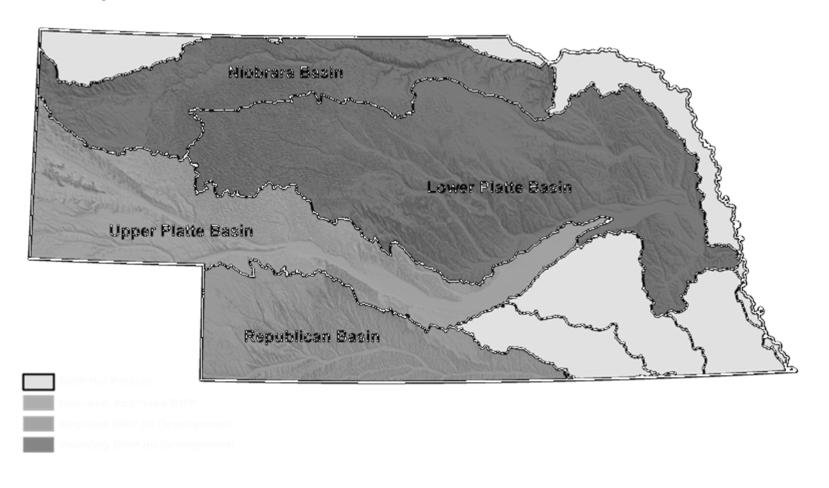
Integrated Management Planning in Nebraska (As of May 2015)





Basin-Wide Planning in Nebraska

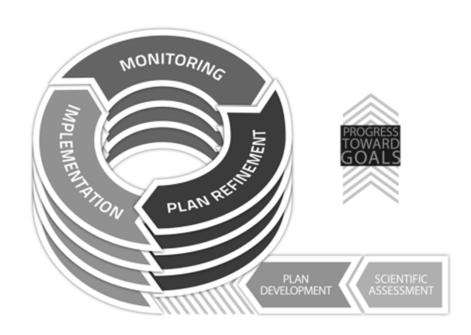
(As of May 2015)





Integrated Management Planning: What is it?

- ➤ A pro-active approach to address water supply opportunities & issues
- Combines surface water and groundwater management
- ➤ Jointly developed with a local NRD
- > Suited to local values and conditions
- Protects investments of existing water users from adverse impacts of overuse
- > Flexible—Adaptive Management





Stakeholder Involvement

- ➤ Each IMP development process includes a stakeholder advisory committee
- ➤ DNR and the NRD consult with the stakeholder committee to:
 - Identify local issues and priorities
 - Determine planning goals and objectives
- ➤ Each plan's action items and controls are based on these goals and objectives



Typical Plan Components

- ➤ Mission/Introduction
- **≻**Goals
- **≻**Objectives
- >Action Items
- ➤ Monitoring



Water Management Projects Strategic Planning Actions Goals and Objectives for Water Planning Stakeholder Involvement Water Availability and Water Shortages Water Supplies and Water Uses Hydrologic Models, Data, and Analyses

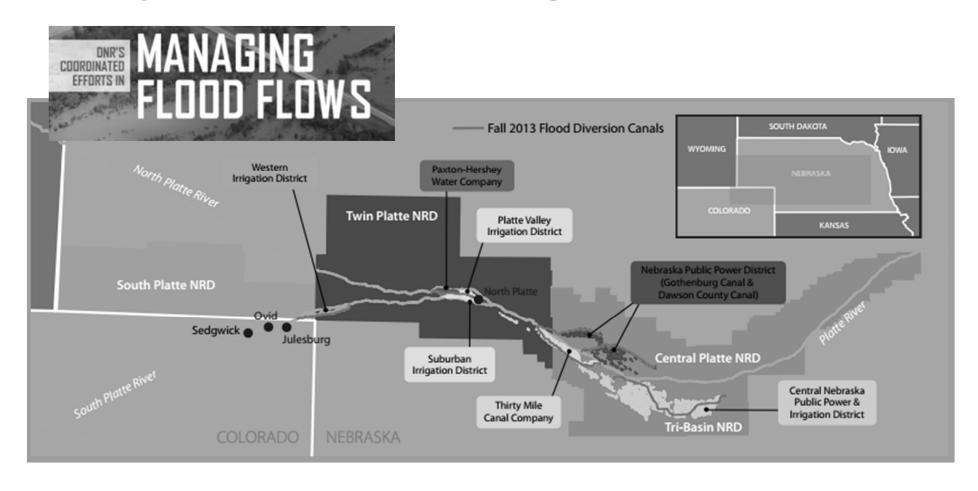


Project Examples

- ➤ Augmentation Well Projects
 - o N-CORPE
 - Rock Creek augmentation wells
 - North Dry Creek augmentation well
- ➤ Conjunctive Management Projects
 - o Cozad Canal
 - o 30-Mile Canal
 - o Orchard-Alfalfa Canal



Conjunctive Water Management Example





Integrated Water Management



Water Management Projects

Strategic Planning Actions

PLANNING AND PUBLIC PARTICIPATION Goals and Objectives for Water Planning

Stakeholder Involvement

Water Availability and Water Shortages

Water Supplies and Water Uses

SCIENCE

Hydrologic Models, Data, and Analyses



STATEWIDE WATER PLANNING

Communication and Agency Coordination



State Water Planning and Review Process

Nebraska Revised Statute § 2-1559

➤ An interagency water planning process

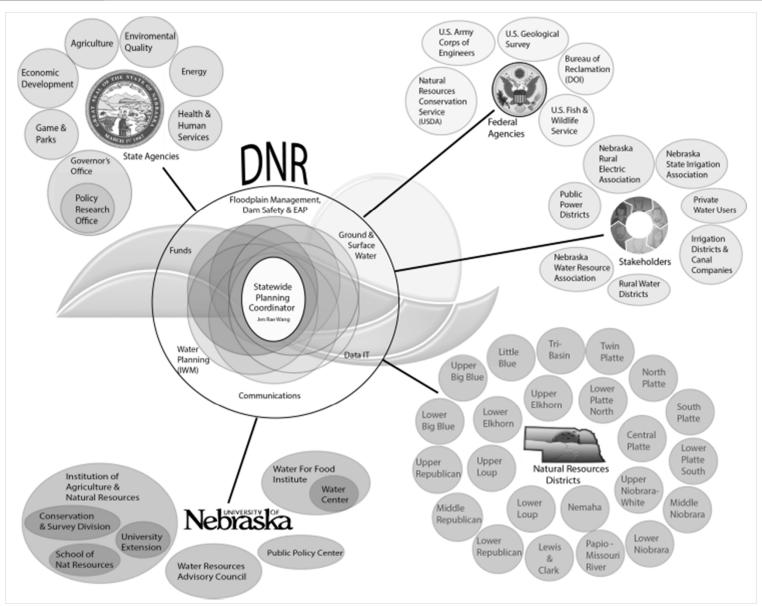
➤ Overall purpose:

 Coordinate planning efforts with the state agencies and the University divisions holding responsibilities and interest in Nebraska's water resources

➤ Providing:

- o Information and methods to address water policy and resource issues
- o Coordinated interagency reviews of water programs and projects
- o Support the basis for water planning and management activities
- Capacity for water resources projects through technical expertise, data and funding
- Protection and promotion of the interests of the State and its citizens regarding the water resources of Nebraska





The Department of Natural Resources

- >The state's resource for applied water science
- ➤ Provides the planning framework
- ➤ Partners with NRDs, other State agencies, Universities, Federal agencies, and all water users



Water Planning

"Nebraska decision-makers have put in place a system of interlinked statutes and regulations, providing a variety of tools to develop, conserve, manage, and protect both surface water and ground water."

"Nebraska... [has] responded...with impressive dedication, new ideas, and financial resources. The results include the ambitious innovations of LB 962; cooperative efforts to recover species and habitat quality in the Platte River; financing for reducing consumptive water use in various basins and NRDs; and increasing recognition of the economic value of recreation and ecotourism."





NEBRASKA'S WATER MANAGEMENT RESOURCE

Providing the sound science and support for managing Nebraska's most precious resource.

THANK YOU

JIM SCHNEIDER, JESSE BRADLEY, SHUHAI ZHENG, JENNIFER SCHELLPEPER, and JEN RAE WANG

Nebraska Department of Natural Resources

402-471-2363

dnr.nebraska.gov f 🔰

